

In the Claims

Please amend the claims as follows.

1 1. (Currently amended) A method of remotely manipulating vehicle elements in a
2 vehicle, comprising:
3 coupling among a plurality of network elements including at least one vehicle
4 internetwork, at least one gateway node of ~~at least one local site~~ the vehicle, and the
5 Internet, wherein the gateway node in the vehicle comprises at least one real-time
6 interface processor (RTIP) and at least one application processor, the RTIP performing
7 real-time operations and the application processor performing high-level processing
8 functions;
9 providing at least one of data processing, data storage, access control, protocol
10 translation, security including service discovery and device authentication, and network
11 control using the gateway node;
12 automatically providing secure interoperability among the plurality of network
13 elements in response to node information including configuration and security
14 information; and
15 remotely manipulating at least one function of the vehicle elements and
16 controlling remote access to the vehicle internetwork using the gateway node of the
17 vehicle in response to intermittent external communications.

1 2. (Previously amended) The method of claim 1, further comprising hosting the at
2 least one vehicle internetwork on at least one of automobiles, trucks, aircraft, trains,
3 motorcycles, and marine vessels.

1 3. (Currently amended) The method of claim 1, further comprising coupling the at
2 least one gateway node of the ~~at least one local site~~ vehicle to a remote user computer;
3 ~~wherein the at least one gateway node is located on at least one site including at least one~~
4 ~~of a home, a service station, a public parking lot, an automobile dealer facility, and an~~
5 ~~automobile service facility.~~

- 1 4. (Original) The method of claim 1, wherein the at least one function includes
2 vehicle control functions, security functions, diagnostic functions, and network access
3 functions.
- 1 5. (Original) The method of claim 1, further comprising establishing
2 communication among the at least one node of a plurality of host vehicles.
- 1 6. (Original) The method of claim 1, further comprising supporting data transfer
2 and manipulation among the plurality of network elements using at least one coupling
3 among the at least one vehicle internetwork and at least one external network, wherein
4 the data includes vehicle assembly data, service data, diagnostic data, maintenance data,
5 maintenance history data, security data, vehicle position data, vehicle operations profile
6 data, operator profile data, fleet management data, fleet reliability analysis data,
7 electronic mail, entertainment software, and targeted advertising data.
- 1 7. (Original) The method of claim 1, further comprising:
2 receiving a first type of data from the at least one vehicle internetwork;
3 performing diagnostic and prognostic analysis on the first type of data;
4 transmitting a second type of data to the at least one vehicle internetwork in
5 response to the diagnostic and prognostic analysis.
- 1 8. (Original) The method of claim 1, further comprising reprogramming at least
2 one element of the at least one vehicle internetwork using at least one Internet coupling.
- 1 9. (Original) The method of claim 1, further comprising reconfiguring at least
2 one element of the at least one vehicle internetwork using at least one Internet coupling.
- 1 10. (Previously amended) The method of claim 1, wherein the at least one vehicle
2 internetwork comprises at least one peripheral electronic device, wherein the at least one
3 peripheral electronic device includes at least one of climate control devices, actuator
4 devices, position location devices, Global Positioning System (GPS) devices,

5 communication devices, cellular telephony devices, personal digital assistants (PDAs),
6 processing devices, diagnostic devices, modems, pager devices, video devices, audio
7 devices, multimedia devices, electronic game devices, sensor devices, switch devices,
8 anti-theft devices, device subnetworks, and wireless local area network (LAN) devices.

1 11. (Original) The method of claim 1, further comprising supporting atomic
2 transactions among the plurality of network elements.

1 12. (Original) The method of claim 1, further comprising manipulating the node
2 information including configuration and security information to provide secure
3 interoperability among the plurality of network elements and at least one peripheral
4 electronic device.

1 13. (Previously amended) The method of claim 1, wherein the at least one vehicle
2 internetwork comprises at least one local area network that includes at least one of an
3 Original Equipment Manufacturer (OEM) bus, at least one Automotive Multimedia
4 Interface Consortium (AMI-C) bus, at least one external network, at least one local
5 development network, and at least one legacy automotive bus including at least one of
6 Audio Control Protocol (ACP) buses and Standard Corporate Protocol (SCP) buses.

1 14. (Previously amended) The method of claim 1, further comprising:
2 accessing the plurality of network elements using at least one local development
3 network; and
4 performing application upgrades, diagnostics, and programming, wherein the at
5 least one local development network supports manipulation and transfer of entertainment
6 software, wherein the entertainment software comprises at least one of video, audio,
7 movies, television shows, music, games, and simulations.

1 15. (Previously amended) The method of claim 1, wherein the at least one vehicle
2 internetwork comprises at least one interface port including at least one of Intelligent
3 Data Bus (IDB-C) ports, MOST ports, Institute of Electrical and Electronics Engineers

4 (IEEE) 1394 ports, On-Board Diagnostic-II (OBD-II) ports, Standard Corporate Protocol
5 (SCP) ports, Audio Control Protocol (ACP) ports, Bluetooth ports, Personal
6 Communications Service (PCS) ports, Global System for Mobile Communications
7 (GSM) ports, and local area network ports.

1 16. (Previously amended) The method of claim 1, wherein providing secure
2 interoperability further includes distributing at least one function among the plurality of
3 network elements in response to a coupling of peripheral electronic devices to at least one
4 local area network of the at least one vehicle internetwork.

1 Claim 17 and 18 (canceled).

1 19. (Previously amended) The method of claim 1, wherein the at least one vehicle
2 internetwork comprises at least one port node including at least one of at least one
3 processor, at least one memory cache, at least one wireless modem, at least one network
4 protocol, at least one policy, and at least one wired local area network (LAN).

1 20. (Previously amended) The method of claim 1, further comprising coupling the at
2 least one vehicle internetwork to at least one subnetwork, wherein the at least one
3 subnetwork comprises at least one device that is at least one of sensor devices, actuator
4 devices, wired network devices, and wireless network devices.

1 21. (Currently amended) The method of claim 1, wherein the at least one vehicle
2 internetwork generates at least one hierarchy of communication alternatives in response
3 to a determined position of a host vehicle, wherein a selected communication device is
4 used to communicate with the at least one ~~local~~ other site.

1 22. (Previously amended) The method of claim 1, further comprising controlling data
2 processing using at least one processing hierarchy that controls at least one of data
3 classifications, data transfers, data queuing, data combining, processing locations, and
4 communications among the plurality of network elements.

1 23. (Previously amended) The method of claim 1, further comprising distributing at
2 least one function among the plurality of network elements, wherein the at least one
3 function includes at least one of data acquisition, data processing, communication
4 management, data routing, data security, programming, node operation, protocol
5 translation, network management, and interfacing with at least one communication
6 physical layer including cellular telephony, wireline telephone, satellite telephony, packet
7 radio, microwave, optical.

1 24. (Original) The method of claim 1, further comprising distributing data
2 processing functions of at least one component of the at least one vehicle internetwork
3 among a plurality of processors.

1 25. (Original) The method of claim 1, further comprising automatically
2 organizing the plurality of network elements, wherein the automatic organizing
3 comprises automatically controlling data transfer, processing, and storage among the
4 plurality of network elements.

1 26. (Original) The method of claim 1, further comprising supporting at least one
2 level of synchronization among different subsets of the plurality of network elements,
3 wherein a first level of synchronization is supported among a first subset of the plurality
4 of network elements, wherein a second level of synchronization is supported among a
5 second subset of the plurality of network elements.

1 27. (Original) The method of claim 1, further comprising self-assembling the
2 plurality of network elements, wherein search and acquisition modes of the plurality of
3 network elements search for participating ones of the plurality of network elements,
4 wherein a determination is made whether each of the participating ones of the plurality of
5 network elements are permitted to join the vehicle internetwork using a message
6 hierarchy, wherein the plurality of network elements are surveyed at random intervals for
7 new nodes and missing nodes.

1 28. (Previously amended) The method of claim 1, wherein service discovery
2 comprises synchronizing at least one node, authenticating the at least one node,
3 determining at least one communication mode for the at least one node, informing the at
4 least one node of resources available among the plurality of network elements.

1 29. (Previously amended) The method of claim 1, further comprising collecting data
2 among the plurality of network elements, wherein at least one operation is performed on
3 the data in response to parameters established by a user, the at least one operation being
4 at least one of classification, routing, processing, storing, and fusing.

1 30. (Original) The method of claim 29, wherein routing comprises selecting at
2 least one data type for routing, determining at least one communication type and at least
3 one communication coupling for routing, selecting at least one of the plurality of network
4 elements to which to route the selected data, selecting at least one route to the selected at
5 least one of the plurality of network elements, and routing the selected at least one data
6 type to the selected at least one of the plurality of network elements.

1 31. (Original) The method of claim 29, wherein processing comprises selecting at
2 least one data type for processing, selecting at least one processing type, selecting at least
3 one of the plurality of network elements to perform the selected at least one processing
4 type, and transferring the selected at least one data type to the selected at least one of the
5 plurality of network elements using at least one route.

1 32. (Original) The method of claim 29, wherein storing comprises selecting at
2 least one data type for storage, selecting at least one storage type, selecting at least one of
3 the plurality of network elements to perform the selected at least one storage type, and
4 transferring the selected at least one data type to the selected at least one of the plurality
5 of network elements using at least one route through the plurality of network elements.

1 33. (Original) The method of claim 29, wherein fusing comprises a first node
2 transmitting at least one query request to at least one other node, wherein the first node

3 collects data from the at least one other node in response to the at least one query request,
4 and processes the collected data.

1 34. (Original) The method of claim 1, wherein the plurality of network elements
2 comprise a plurality of application programming interfaces (APIs), wherein the APIs
3 include APIs for application support, database services, routing, security, network
4 management, and deployment.

1 35. (Original) The method of claim 34, wherein the plurality of APIs are layered,
2 wherein the plurality of APIs enable distributed resource management by providing
3 network resource information among the plurality of network elements, wherein
4 information transfer among the plurality of network elements is controlled using a
5 synchronism hierarchy established in response to the network resource information.

1 36. (Previously amended) The method of claim 1, further comprising supporting at
2 least one of wireless communications, wired communications, and hybrid wired and
3 wireless communications.

1 37. (Previously amended) The method of claim 1, further comprising coupling the at
2 least one vehicle internetwork to at least one remote computer through the plurality of
3 network elements, wherein the plurality of network elements further includes at least one
4 of at least one station gateway, at least one server, at least one repeater, at least one
5 interrogator, and at least one network, wherein the at least one network includes wired
6 networks, wireless networks, and hybrid wired and wireless networks.

1 38. (Previously amended) The method of claim 1, wherein the remote manipulation is
2 performed using World Wide Web-based tools to manipulate data, code, control, and
3 security functions.

1 39. (Original) The method of claim 1, wherein the plurality of network elements
2 comprise a plurality of node types, wherein the plurality of node types includes at least

3 one node of a first type and at least one node of a second type, wherein a first network
4 having a first node density is assembled using the at least one node of a first type,
5 wherein a second network having a second node density is assembled using the at least
6 one node of a second type.

1 40. (Previously amended) The method of claim 1, further comprising transferring
2 software and data among the plurality of network elements, wherein the transfer is
3 remotely controllable, wherein the software and the data are downloadable from at least
4 one of storage devices of the plurality of network elements, external storage devices, and
5 remote storage devices.

1 41. (Original) The method of claim 1, further comprising:
2 coupling the at least one vehicle internetwork to at least one diagnostic device;
3 collecting vehicle data using the at least one diagnostic device; and
4 transferring the vehicle data to at least one remote computer using at least one
5 wireless coupling.

1 42. (Currently amended) A computer readable medium containing executable
2 instructions which, when executed in a processing system, cause the processing system to
3 remotely manipulate vehicle elements in a vehicle by:
4 coupling among a plurality of network elements including at least one vehicle
5 internetwork, at least one gateway node of ~~at least one local site~~ the vehicle, and the
6 Internet, wherein the gateway node of the vehicle comprises at least one real-time
7 interface processor (RTIP) and at least one application processor, the RTIP performing
8 real-time operations and the application processor performing high-level processing
9 functions;
10 providing at least one of data processing, data storage, access control, protocol
11 translation, security including service discovery and device authentication, and network
12 control using the gateway node;

13 automatically providing secure interoperability among the plurality of network
14 elements in response to node information including configuration and security
15 information; and
16 remotely manipulating at least one function of the vehicle elements and
17 controlling remote access to the vehicle internetwork using the gateway node in response
18 to intermittent external communications.

1 43. (Previously amended) The computer readable medium of claim 42, wherein the
2 processing system further manipulates vehicle elements by hosting the at least one
3 vehicle internetwork on at least one of automobiles, trucks, aircraft, trains, and
4 motorcycles.

1 44. (Currently amended) The computer readable medium of claim 42, wherein the
2 processing system further manipulates vehicle elements by coupling the at least one
3 gateway node of the ~~at least one local site vehicle~~ to a remote user computer, ~~wherein the~~
4 ~~at least one gateway node is located on at least one of a home, a service station, a public~~
5 ~~parking lot, an automobile dealer facility, and an automobile service facility.~~

1 45. (Original) The computer readable medium of claim 42, wherein the at least
2 one function includes vehicle control functions, security functions, diagnostic functions,
3 and network access functions.

1 46. (Original) The computer readable medium of claim 42, wherein the
2 processing system further manipulates vehicle elements by establishing communication
3 among the at least one node of a plurality of host vehicles.

1 47. (Original) The computer readable medium of claim 42, wherein the
2 processing system further manipulates vehicle elements by supporting data transfer and
3 manipulation among the plurality of network elements using at least one coupling among
4 the at least one vehicle internetwork and at least one external network, wherein the data
5 includes vehicle assembly data, service data, diagnostic data, maintenance data,

6 maintenance history data, security data, vehicle position data, vehicle operations profile
7 data, operator profile data, fleet management data, fleet reliability analysis data,
8 electronic mail, entertainment software, and targeted advertising data.

1 48. (Original) The computer readable medium of claim 42, wherein the
2 processing system further manipulates vehicle elements by:
3 receiving a first type of data from the at least one vehicle internetwork;
4 performing diagnostic and prognostic analysis on the first type of data;
5 transmitting a second type of data to the at least one vehicle internetwork I
6 response to the diagnostic and prognostic analysis.

1 49. (Currently amended) An electromagnetic medium containing executable
2 instructions which, when executed in a processing system, cause the processing system to
3 remotely manipulate vehicle elements of a vehicle by:
4 coupling among a plurality of network elements including at least one vehicle
5 internetwork, at least one gateway node of ~~at least one local site~~ the vehicle, and the
6 Internet, wherein the gateway node of the vehicle comprises at least one real-time
7 interface processor (RTIP) and at least one application processor, the RTIP performing
8 real-time operations and the application processor performing high-level processing
9 functions;
10 providing at least one of data processing, data storage, access control, protocol
11 translation, security including service discovery and device authentication, and network
12 control using the gateway node;
13 automatically providing secure interoperability among the plurality of network
14 elements in response to node information including configuration and security
15 information; and
16 remotely manipulating at least one function of the vehicle elements and
17 controlling remote access to the vehicle internetwork using the gateway node in response
18 to intermittent external communications.

1 50. (Previously amended) The electromagnetic medium of claim 49, wherein the
2 processing system further manipulates vehicle elements by hosting the at least one
3 vehicle internetwork on at least one of automobiles, trucks, aircraft, trains, motorcycles,
4 and marine vessels.

1 51. (Currently amended) The electromagnetic medium of claim 49, wherein the
2 processing system further manipulates vehicle elements by coupling the at least one
3 gateway node of the ~~at least one local site~~ vehicle to a remote user computer, ~~wherein the~~
4 ~~at least one gateway node is located on at least one of a home, a service station, a public~~
5 ~~parking lot, an automobile dealer facility, and an automobile service facility.~~

1 52. (Original) The electromagnetic medium of claim 49, wherein at least one
2 function includes vehicle control functions, security functions, diagnostic functions, and
3 network access functions.

1 53. (Original) The electromagnetic medium of claim 49, wherein the processing
2 system further manipulates vehicle elements by establishing communication among the at
3 least one node of a plurality of host vehicles.

1 54. (Original) The electromagnetic medium of claim 49, wherein the processing
2 system further manipulates vehicle elements by supporting data transfer and manipulation
3 among the plurality of network elements using at least one coupling among the at least
4 one vehicle internetwork and at least one external network, wherein the data includes
5 vehicle assembly data, service data, diagnostic data, maintenance data, maintenance
6 history data, security data, vehicle position data, vehicle operations profile data, operator
7 profile data, fleet management data, fleet reliability analysis data, electronic mail,
8 entertainment software, and targeted advertising data.

1 55. (Original) The electromagnetic medium of claim 49, wherein the processing
2 system further manipulates vehicle elements by:
3 receiving a first type of data from the at least one vehicle internetwork;

- 4 performing diagnostic and prognostic analysis on the first type of data;
- 5 transmitting a second type of data to the at least one vehicle internetwork in
- 6 response to the diagnostic and prognostic analysis.